

TABLE 10

Higher education R&D expenditures, by R&D field: FYs 2010–21

(Dollars in thousands)

Field	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
All R&D fields	61,286,610	65,274,393	65,729,007	67,013,138	67,199,090	68,549,882	71,767,849	75,147,113	79,023,156	83,487,471	86,300,399	89,723,447
Science	49,061,829	51,955,427	51,914,870	52,620,113	52,789,968	53,865,380	56,261,425	58,935,314	62,017,677	65,418,542	67,569,466	70,316,530
Computer and information sciences	1,638,047	1,742,486	1,822,321	2,068,498	1,929,144	1,963,355	2,079,944	2,192,346	2,397,731	2,637,354	2,925,725	2,951,923
Geosciences, atmospheric sciences, and ocean sciences	2,991,741	3,153,174	3,173,011	3,195,505	3,227,991	3,247,463	3,083,754	3,147,878	3,159,553	3,185,958	3,281,457	3,295,883
Atmospheric science and meteorology	429,354	481,275	476,729	493,460	501,633	573,913	626,676	623,504	608,041	590,385	612,784	624,579
Geological and earth sciences	1,083,969	1,142,630	1,168,945	1,163,847	1,159,446	1,113,727	998,082	1,084,087	1,131,923	1,121,300	1,159,846	1,242,339
Ocean sciences and marine sciences	1,021,857	1,049,630	1,025,472	1,051,418	1,071,371	1,050,143	1,097,963	1,098,634	1,061,402	1,100,768	1,136,023	1,035,519
Geosciences, atmospheric sciences, and ocean sciences nec	456,561	479,639	501,865	486,780	495,541	509,680	361,033	341,653	358,187	373,505	372,804	393,446
Life sciences	34,984,249	37,337,522	37,200,171	37,564,440	37,959,147	38,773,693	40,869,476	43,099,078	45,606,786	48,228,599	49,622,337	52,364,596
Agricultural sciences	3,011,150	3,116,840	3,300,098	3,352,448	3,392,383	3,482,285	3,294,486	3,274,597	3,307,251	3,426,773	3,625,448	3,548,896
Biological and biomedical sciences	10,946,456	11,855,468	11,611,632	11,681,013	11,706,842	11,705,091	13,030,223	13,723,239	14,517,040	15,390,830	15,764,528	16,557,201
Health sciences	19,268,085	20,398,377	20,330,413	20,453,934	20,709,435	21,298,977	22,388,131	23,990,797	25,774,623	27,267,137	28,001,450	29,884,728
Natural resources and conservation ^a	na	na	na	na	na	na	693,318	691,653	779,526	841,877	901,667	934,765
Life sciences nec	1,758,558	1,966,837	1,958,028	2,077,045	2,150,487	2,287,340	1,463,318	1,418,792	1,228,346	1,301,982	1,329,244	1,439,006
Mathematics and statistics	592,200	640,471	674,461	670,801	657,868	640,874	679,494	700,260	750,358	769,073	800,322	772,935
Physical sciences	4,621,772	4,768,816	4,710,125	4,646,909	4,616,416	4,659,245	4,887,988	5,050,157	5,232,227	5,550,741	5,671,806	5,740,630
Astronomy and astrophysics	573,229	583,847	706,544	558,635	567,022	626,589	621,738	648,813	668,227	734,987	780,356	741,127
Chemistry	1,748,465	1,783,604	1,748,904	1,704,123	1,724,263	1,757,548	1,773,406	1,791,523	1,866,167	1,965,466	1,929,674	1,999,546
Materials science ^a	na	na	na	na	na	na	172,271	227,825	254,447	259,316	252,521	285,931
Physics	1,998,732	2,108,340	1,985,954	2,097,154	2,056,272	2,047,668	2,120,550	2,155,695	2,206,620	2,327,034	2,434,432	2,463,331
Physical sciences nec	301,346	293,025	268,723	286,997	268,859	227,440	200,023	226,301	236,766	263,938	274,823	250,695
Psychology	1,077,655	1,159,180	1,179,323	1,128,352	1,143,373	1,183,638	1,221,218	1,244,637	1,259,453	1,326,351	1,360,904	1,326,030
Social sciences	1,999,942	2,063,007	2,053,656	2,173,232	2,212,011	2,319,031	2,364,783	2,554,565	2,721,777	2,805,154	2,953,545	2,842,033
Anthropology ^a	na	na	na	na	na	na	95,932	110,926	118,229	124,385	119,869	109,546
Economics	352,890	387,036	383,405	408,304	428,473	456,480	398,366	433,997	455,900	458,086	558,825	549,132
Political science and government	374,903	370,694	390,074	427,503	426,668	459,265	383,994	412,103	438,069	447,750	425,776	425,661
Sociology, demography, and population studies	419,895	433,484	461,011	482,284	504,959	524,683	503,610	551,853	608,723	610,102	594,688	552,551

TABLE 10

Higher education R&D expenditures, by R&D field: FYs 2010–21

(Dollars in thousands)

Field	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Social sciences nec	852,254	871,793	819,166	855,141	851,911	878,603	982,881	1,045,686	1,100,856	1,164,831	1,254,387	1,205,143
Sciences nec	1,156,223	1,090,771	1,101,802	1,172,376	1,044,018	1,078,081	1,074,768	946,393	889,792	915,312	953,370	1,022,500
Engineering	9,325,722	10,032,590	10,284,111	10,734,157	10,976,067	11,070,075	11,373,163	11,911,276	12,363,648	13,214,628	13,707,821	14,293,487
Aerospace, aeronautical, and astronautical engineering	635,234	667,757	662,444	689,553	662,432	734,153	883,100	990,723	1,010,502	1,170,169	1,293,452	1,451,964
Bioengineering and biomedical engineering	745,277	817,389	871,917	884,421	951,148	1,003,910	1,086,194	1,220,680	1,343,753	1,451,159	1,470,038	1,560,381
Chemical engineering	821,163	913,905	903,613	910,413	907,074	914,493	884,662	934,527	931,039	977,578	1,001,458	1,024,301
Civil engineering	1,106,759	1,208,592	1,232,944	1,296,972	1,256,871	1,287,269	1,329,959	1,302,314	1,354,775	1,432,949	1,424,780	1,482,377
Electrical, electronic, and communications engineering	2,050,292	2,206,894	2,311,665	2,408,824	2,479,755	2,492,371	2,512,529	2,726,458	2,843,796	2,937,880	3,051,845	3,080,363
Industrial and manufacturing engineering ^a	na	na	na	na	na	na	236,678	351,081	514,781	556,355	586,908	573,915
Mechanical engineering	1,458,382	1,556,892	1,550,151	1,647,643	1,504,172	1,514,636	1,435,885	1,535,819	1,630,541	1,704,961	1,817,413	1,881,551
Metallurgical and materials engineering	703,332	738,892	757,967	812,240	1,203,063	1,101,917	744,005	735,699	762,695	792,370	818,665	841,196
Engineering nec	1,805,283	1,922,269	1,993,410	2,084,091	2,011,552	2,021,326	2,260,151	2,113,975	1,971,766	2,191,207	2,243,262	2,397,439
Non-S&E	2,899,059	3,286,376	3,530,026	3,658,868	3,433,055	3,614,427	4,133,261	4,300,523	4,641,831	4,854,301	5,023,112	5,113,430
Business management and business administration	370,015	400,376	443,079	476,025	482,893	569,716	642,391	725,284	784,394	868,166	880,567	934,020
Communication and communications technologies	130,396	153,743	159,920	148,900	166,896	168,512	166,409	202,539	191,599	206,728	190,252	186,003
Education	993,588	1,120,766	1,233,437	1,221,364	1,245,066	1,292,666	1,340,240	1,384,278	1,503,593	1,521,681	1,602,246	1,616,705
Humanities	260,374	313,032	339,633	386,759	402,209	430,174	443,138	492,626	504,115	538,074	563,400	556,694
Law	98,109	124,779	131,514	173,479	149,235	174,692	184,339	223,824	266,377	255,794	267,655	282,662
Social work	177,331	194,667	199,046	212,331	226,062	214,205	211,549	235,295	245,113	285,646	307,106	319,273
Visual and performing arts	68,717	77,358	84,596	87,838	95,869	100,681	133,869	124,907	137,162	158,971	173,191	179,563
Non-S&E nec	800,529	901,655	938,801	952,172	664,825	663,781	1,011,326	911,770	1,009,478	1,019,241	1,038,695	1,038,510

na = not applicable; separate data for natural resources and conservation, materials science, anthropology, and industrial and manufacturing engineering were not collected prior to FY 2016.

nec = not elsewhere classified; S&E = science and engineering.

^a Prior to FY 2016, expenditures for natural resources and conservation, materials science, anthropology, and industrial and manufacturing engineering were not collected separately. See the FY 2016 Technical Notes, Appendix A (<https://ncsesdata.nsf.gov/herd/2016>) for information detailing where these fields were previously reported.

Note(s):

FY 2016 R&D expenditure amounts in various fields may show increases or decreases from amounts reported in FY 2015 because of the reclassification of disciplines. See the FY 2016 Technical Notes, Appendix A (<https://ncsesdata.nsf.gov/herd/2016>) for specific details about discipline changes.

Source(s):
National Center for Science and Engineering Statistics, Higher Education Research and Development Survey.